

5.15 Visual Resources

This section addresses the potential impacts to visual resources of the Amended SSU6 Project. Visual resources are the elements of the landscape that contribute to the aesthetic character and quality of the environment. These elements are either natural or human-made. Impacts to visual resources are rated by the extent to which changes would contrast with the existing visual character and quality of the environment. This section documents the potential for the construction, operation, maintenance, and long-term presence of the Project to result in significant impacts on visual resources or sensitive receptors.

The transmission lines that will interconnect the Project to the regional electrical grid have already been licensed by the California Energy Commission (CEC). Because the Amended Project does not propose any modification to the transmission lines, they are not addressed in this section.

5.15.1 Summary of Differences between Amended Project and Original SSU6

The visual resources impacts of the Amended Project would be less than significant, and are similar but slightly less than the original SSU6 project. There have been minimal changes to the existing visual setting of the Project since the original SSU6 project was licensed. As with the original project, the Amended Project facilities will be constructed in an area where the visual environment has already been modified substantially by the presence of nine existing geothermal facilities within two miles of the plant site. The Project will add one more facility similar to those that already exist. The Project facilities themselves will be visually similar to those of the original SSU6. The primary visual differences between the Amended Project and the original proposal are the change to three individual 53 megawatt (MW) net plants from one 215 MW net plant, and the use of a different geothermal technology by the Amended Project that eliminates one source of visible plume emissions (atmospheric flash tanks). Additionally, the Amended Project will have three smaller visible cooling tower plumes rather than two larger plumes (the 215 MW plant approved in the 2005 Amendment to the CEC certification had two cooling towers). The nine existing plants also emit visible plumes, and visible plumes from the Amended Project (and the original project) will occur in a context where visible plumes from geothermal facilities are already part of the visual landscape. The Applicant considers the mitigation measures contained in the existing Conditions of Certification for the original project as appropriate for the Amended Project.

5.15.2 LORS Compliance

The Project will comply with the applicable LORS pertaining to visual resources. Table 5.15-1 summarizes the applicable Federal, State, and local LORS. Additional discussion of these LORS is provided following the table.

Table 5.15-1 Summary of Applicable Visual Resources LORS

Authority	Requirement	Where Addressed in AFC
Federal:		

Table 5.15-1 Summary of Applicable Visual Resources LORS

Authority	Requirement	Where Addressed in AFC
None		
State:		
California Environmental Quality Act (CEQA); California Public Resources Code, Section 2100 et seq.	CEQA Guidelines require (and provide criteria for) assessment of visual resources impacts	Sections 5.15.4 and 5.15.5
California Scenic Highway Program (Streets and Highways Code Sec. 260 et seq.)	Enacted in 1963 with the goal of preserving and protecting the State's scenic highway corridors from change that would diminish their aesthetic value.	Section 5.15.4
Local:		
Imperial County, Planning and Development Services Department, General Plan and Planning Ordinances / Codes	General Plan requirements for regulation of land use.	Section 5.15.4 (see also Section 5.7, Land Use)

5.15.2.1 Federal LORS

There are no Federal visual resources-related LORS that apply to the Amended Project.

5.15.2.2 State LORS

State LORS that apply to the Project are the following.

California Environmental Quality Act; California Public Resources Code, Section 2100 et seq.

CEQA includes the aesthetic environment as one of the resource areas to be considered in environmental assessment documents. Appendix G of the CEQA guidelines includes several criteria for determining whether a project may have a significant effect on the environment because of aesthetic impacts. Because the CEC licensing process is a CEQA-equivalent process, the CEC is the administering agency.

5.15.2.3 Local LORS

Local LORS applicable to the Project include the following.

Imperial County General Plan

The Conservation and Open Space Element of the Imperial County General Plan includes multiple references to aesthetics/visual resources. While not specific to geothermal development, they indicate that protecting the County's visual resources is an important issue. For example, the Element states that it provides detailed plans and measures for preserving and managing "biological and cultural resources, soils, minerals, energy, regional aesthetics, air quality, and open space." It goes on to note the wealth of scenic visual resources in the county including "desert areas, sand hills, mountains, and the Salton Sea." A

number of the Conservation and Open Space Element goals and objectives address visual resources issues:

Goal 7: The aesthetic character of the region shall be protected and enhanced to provide a pleasing environment for residential, commercial, recreational, and tourist activity.

Objective 7.1 Encourage the preservation and enhancement of the natural beauty of the desert and mountain landscape.

Goal 10: Open space shall be maintained to protect the aesthetic character of the region, protect natural resources, provide recreational opportunities, and minimize hazards to human activity.

Objective 10.2 Recognize the regional significance of the development and conservation of recreational opportunities in Imperial County.

Objective 10.9 Conserve desert lands, within the county's jurisdiction for wildlife protection, recreation, and aesthetic purposes.

5.15.2.4 Agencies and Agency Contacts

The local agency involved in visual resources issues is the Imperial County Planning Department. Contact information is provided in Table 5.15-2.

Table 5.15-2 Agencies and Agency Contacts

Agency Contact	Phone/E-mail	Permit/Issue
Jurg Heuberger, Director Imperial County Planning & Development Services Dept. 801 Main Street El Centro, CA 92243	(760) 482-4310 jurgheuberger@imperialcounty.net	General Plan compliance Conditional Use Permit

5.15.2.5 Required Permits and Permit Schedule

In addition to providing input concerning local requirements to the CEC through the Amendment Petition review process, Imperial County intends either to issue a new Conditional Use Permit (CUP) for the Amended Project or to amend the existing CUP that the County issued for the original SSU6 (and amended in 2005).

5.15.3 Affected Environment

The following subsections discuss the visual environment in the vicinity of the Project site.

5.15.3.1 Regional and Local Setting

The Amended Plant site occurs within a 160-acre parcel with an average elevation of 225 feet below sea level. The Project site is located adjacent to and south of McKendry Road near the southeast edge of the Salton Sea in unincorporated Imperial County. The landscape is comprised of agricultural lands primarily

supporting hay (alfalfa, Bermuda, Sudan), vegetables and wheat. Rainfall occurs at annual rate of approximately 3.5 to 3.7 inches. Predominant plant species in the area other than those of agricultural production include desert scrub, creosote bush, salt bush, and tamarisk, cheeseweed, shepherd's purse, salt cedar, and bermuda grass.

Topography of the area is characterized by flat to slightly rolling landforms. There are several mountain ranges and mountains surrounding the Imperial Valley, including the Santa Rosa, Fish Creek, Coyote, and Jacumba Mountains to the west; the Chocolate Mountains to the northeast; Algodones Sand Dunes, Picacho Peaks, and Cargo Muchacho Mountains to the southeast; and Palo Verde Peak to the northeast. The New River runs approximately five miles south of the plant site, and the Alamo River is three miles east of the site. Both rivers flow north to the Salton Sea from the California/Mexico border.

The Sonny Bono Salton Sea National Wildlife Refuge (Wildlife Refuge), with annual visitation of approximately 40,000 to 60,000 people, is located in close proximity to the north of the plant site. However, the Salton Sea is receding. If this continues, bird watching opportunities may well diminish over the life of the Amended Project and visitation to the Refuge may decline. The Wildlife Refuge includes approximately 35,484 acres of salt marsh and open water, as well as approximately 2,000 acres of pasture and freshwater marsh. The Bureau of Land Management's California Desert Conservation Area is 10 miles southwest of the plant site.

Nine geothermal plants are located within approximately two miles of the Amendment Project site. These facilities are substantially noticeable, existing modifications to the natural and agricultural landscape and include strong geometric patterns associated with existing generating plants, well pads, pipelines, transmission lines, substations, etc.

The Project area is very lightly populated. The nearest residence is the ranger residence at the Wildlife Refuge headquarters, about 0.8 miles northeast of the plant site. The next closest residence is approximately two miles from the site. The nearest community is Calipatria, approximately six miles to the southeast. The general Project vicinity includes two major north-south travel routes (State Route [SR] 86 and SR 111). Two-lane rural roads provide the secondary travel routes through the area.

The aesthetic character of the Amended Project plant site is presently dominated by the agricultural landscape and nearby existing geothermal facilities (see Section 5.7, Land Use, for a description of existing land uses on and in the vicinity of the Project). Compared to the region's characteristic landscape (its existing landforms, vegetation, and water bodies), the scenic quality of the Amended Project site is considered low to moderate. Existing natural features such as Obsidian Butte, Rock Hill, Red Hill, and the Salton Sea itself are elements in the existing landscape that are of higher visual quality. These higher quality landscape elements are unique in the region and also are in close proximity to each other. The casual observer would not consider the Project site to be unusual or of particular interest visually; the agricultural pattern of the Project site is common within the agricultural landscape of the surrounding areas of the Imperial Valley.

The plant site has distant views of the mountains and is visible at a distance from the same mountains. Overall visibility of the plant site and its surrounding area are shown in Figure 5.15-1. As noted earlier, the area is very lightly populated. The greatest potentials for public views of the Project are from the Wildlife Refuge, Red Island Recreation Area, Rock Hill, and roadways in the vicinity of the site.

5.15.3.2 Visual Resources Evaluation Factors and Methodology

Evaluations of visual resources in connection with the Amended Project are based on field observations, area maps, 2-dimensional (2D) and 3D engineering drawings, photographs of the Project area, and computer-aided photographic simulations. These simulations present views of the plant site from the four locations that were selected as Key Observation Points (KOPs) for the visual resources evaluation (Figure 5.15-3). These KOPS were chosen in consultation with CEC staff and are the same KOPs as were used for the original SSU6 AFC.

Scenic quality judgments are made based on professional qualifications and experience applying criteria that include the following elements:

- Landscape features, including topography, water, and vegetation;
- Cultural alterations and built structures, including roads, residences and industrial buildings; and
- Visual composition, including an assessment of the vividness,¹ intactness, and unity of patterns in the landscape.

Landscape Scenic Quality Scale

Overall landscape scenic quality is evaluated in the range of High, Moderate, or Low, based on Buhyoff et al. (1994), U.S. Department of Transportation Federal Highway Administration (1988); and U.S. Forest Service (1995). The elements of the rating scale are defined below:

- High Visual Quality: These landscapes contain natural and/or cultural elements of high quality scenic value. Levels of vividness, unity, and intactness are above average.
- Moderate Visual Quality: These landscapes contain natural and/or cultural elements of moderate scenic value. Levels of vividness, unity, and intactness are average.
- Low Visual Quality: These landscapes contain natural and/or cultural elements of low scenic value. Levels of vividness, unity, and intactness are below average.

Field investigations were conducted to document the visual characteristics and issues of the Project area, identify KOPs, and photograph existing visual conditions. Photography was conducted using a high quality (Nikon D200) digital sensor with standard 50-mm camera lens. Figures 5.15-4a through 5.15-7b represent the existing visual condition and visual simulations from each of the four KOPs. In each case, the first figure in the series (e.g., Figure 5.15-4a) represents the existing visual condition. The second figure (e.g., Figure 5.15-4b) simulates the visual environment including the Project facilities. These various simulations portray the appearance of the Project facilities in the landscape of the site and vicinity.

The computer-aided photographic simulations were developed as described below. Computer modeling and rendering techniques were used to produce the simulated images of the views of the Project site as

1. Vividness is the degree of memorability and/or distinctiveness of landscape elements in the visual pattern. Intactness is the degree of integrity of visual order and/or absence of visual encroachment from discordant elements. Unity is the degree of coherent, harmonious visual patterns among the dominant elements of the landscape (USDOT FHWA, 1988).

they would appear from each KOP after the completion of Project construction. Existing topographic and engineering (ArcGIS and AutoCAD) data were utilized to construct 3D (eye level height 5.5 feet) digital and photographic images of the generation and linear facilities. These images were combined with the digital photography from each KOP to produce a complete computer-aided image of the power generating facility (see also Section 2.0, Project Description, for a photograph of existing pre-Project conditions at the plant site and a simulation with Project facilities added). Digital visual simulation images of computer renderings were combined with the digital KOP and “pre-Project” photographs. The final “hardcopy” simulation images that appear in this Amendment were produced from the digital image files using a color printer.

5.15.3.3 Key Observation Points

As noted above, the approach to evaluating the visual impacts of Project is based on KOPs. KOPs are view receptors that are sensitive and/or considered representative. Views from these locations are the framework for analyzing existing visual conditions. In addition, KOPs serve as locations for photographic simulations of a proposed project.

In consultation with CEC Staff, four KOPs (associated with the plant site) from the previous AFC were selected to evaluate the Project’s existing conditions and potential visual impacts. They are:

KOP-1 Entrance to the Salton Sea National Wildlife Refuge

KOP-2 Red Island Recreation Area

KOP-3 Residence on Lack Road

KOP-4 Rock Hill

Existing visual conditions of the view from each KOP were evaluated and documented during fieldwork conducted in November 2008.

KOP-1 Entrance to the Salton Sea National Wildlife Refuge

KOP-1 is located approximately 0.7 miles northeast of the plant site (Figure 5.15-4a). The fore-ground and middle-ground views from KOP-1 are typical of the visual character of the cultural landscape. The visual quality of this view is low to moderate; the combination of irrigated landscape and large structures form distinctive visual patterns in the view. The visual resources do not form a strong, coherent pattern, and the visual integrity in the natural and human-built landscape is moderate. The Project facilities will be visible in the foreground by viewers at this receptor. Due to the recreational nature of this KOP at present, the level of visual sensitivity is high.

KOP-2 Red Island Recreation Area

KOP-2 is located approximately 2.0 miles northeast of the plant site (Figure 5.15-5a). The fore-ground and middle-ground views from KOP-2 contain the Salton Sea, Obsidian Butte, and Rock Hill and are typical of the visual character of the cultural and natural landscape. The background view is in part comprised of the Superstition Mountains. The visual quality of this view is moderate to high; the combination of landforms, landscape, and large structures form distinctive visual patterns in the view. The visual resources do not form a strong, coherent pattern, and the visual integrity in the natural and human-built landscape is moderate. The Project facilities will be visible in the middle ground by viewers at this receptor; other existing

geothermal facilities are much closer and more clearly visible than those of the Amended Project. Due to the recreational nature of this KOP at present, the level of visual sensitivity is high.

KOP-3 Residence on Lack Road

KOP-3 is located approximately 3.2 miles southwest of the plant site (Figure 5.15-6a). The fore-ground and middle-ground views from KOP-3 are typical of the visual character of the cultural and natural landscape. The background view is comprised of the Black Butte mountain range. The visual quality of this view is low to moderate; the combination of landforms, landscape, and large structures form distinctive visual patterns in the view. The visual resources do not form a strong, coherent pattern, and the visual integrity in the natural and human-built landscape is moderate. The Project facilities will be visible in the middle ground by viewers at this receptor. Due to the residential nature of this KOP, the level of visual sensitivity is moderate.

KOP-4 Rock Hill

KOP-4 is located approximately 0.9 miles north of the plant site (Figure 5.15-7a). The fore-ground and middle-ground views from KOP-2 contain the Salton Sea and are typical of the visual character of the cultural and natural landscape. The background view is in part comprised of the Superstition Mountains. The visual quality of this view is moderate; the combination of agricultural landscape and large structures form distinctive visual patterns in the view. The visual resources do not form a strong, coherent pattern, and the visual integrity in the natural and human-built landscape is moderate. The Project facilities will be visible in the foreground by viewers at this receptor. Due to the recreational nature of this KOP at present, the level of visual sensitivity is high.

5.15.4 Environmental Impacts

The following subsections present an evaluation of the impacts on visual resources of the Project.

5.15.4.1 Impact Evaluation Criteria

The assessment of the Amended Project's impacts is based on an evaluation of the changes to the existing visual environment that would result from Project construction and operation. For assessing impacts during Project operation, the computer-aided photographic simulations were analyzed for their contrast with the existing visual environment. Because of the temporary nature of Project construction activities, simulations were not used in the impact evaluation of that phase.

In determining the extent and implications of the visual changes, a number of factors were considered:

- The specific changes in the affected environment's composition, character, and any outstanding valued qualities;
- The context of the affected visual environment;
- The extent to which the affected environment contains places or features that have been designated in plans and policies for protection or special consideration; and
- The numbers of viewers, their activities, and the extent to which these activities are related to the visual qualities affected by proposed changes.

Significance criteria for impacts to visual resources were developed from Appendix G of the State CEQA guidelines and include the following:

- Would the project have a substantial adverse effect on a scenic vista?
- Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?
- Would the project substantially degrade the existing visual character or quality of the site and its surroundings?
- Would the project create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?

5.15.4.2 Project Appearance

The Project facilities are described in detail in Section 2.0, Project Description, which includes simulated views of the Project's facilities and linear facilities. Non-reflective chain link fencing will be installed around the plant site perimeter for security. Project equipment will have non-reflective surfaces and neutral colors to minimize their visual impacts. Table 5.15-3 presents the dimensions of major Project components that may be visible from offsite locations. The tallest Project structures, at 55 feet, will be the three cooling towers (one for each of the 53 MW generating units). They will be visible throughout the valley for a distance of approximately 10 to 12 miles, depending on atmospheric conditions and intervening vegetation and structures (Figure 5.15-1).

Table 5.15-3 Significant Project Structure Dimensions

Structure	Height (ft)	Length x Width (ft)
Turbine platform	31	80 x 50
Recuperative Thermal Oxidizer (RTO)	35 (also has 64.5-foot stack)	29 x 16
Cooling Tower	55	282 x 54
HP Scrubber	35	5' diameter
HP Demister	36	8' diameter
Control Building	20	100 x 100
HP Separator	27	54' long x 12' diameter

Project operations will require onsite nighttime lighting for safety and security. To reduce potential offsite lighting impacts, lighting at the facility will be restricted to areas required for safety, security, and operation. Exterior lights will be hooded, and lights will be directed onsite so that light or glare will be minimized. Low-pressure sodium lamps and fixtures of a non-glare type will be specified. Switched lighting will be provided for areas where continuous lighting is not required for normal operation, safety, or security; this will allow these areas to remain un-illuminated (dark) most of the time and, thereby, minimizing the amount of lighting potentially visible offsite.

Project construction activities typically will occur during normal Monday through Friday working hours, although nighttime activities may occur at certain times during the construction period depending on the Project schedule. When and if nighttime construction activities take place, illumination will be provided that meets State and Federal worker safety regulations. To the extent possible, the nighttime construction lighting will be erected pointing toward the center of the site where activities are occurring, and will be shielded. Task-specific lighting will be used to the extent practical while complying with worker safety regulations.

The Project's effects on visual conditions during hours of darkness will be moderate. As indicated earlier, some nighttime lighting will be required for operational safety and security. There will be a small amount of additional visible lighting associated with the Project structures and open site areas. At times when lights are turned on, the lighting will not be highly visible offsite and will not produce offsite glare effects. The offsite visibility and potential glare of the lighting will be minimized by specification of non-glare fixtures and placement of lights to direct illumination into only those areas where it is needed. When viewed from nearby offsite locations, the overall change in ambient lighting conditions at the Project site will be less than significant.

To the extent feasible and consistent with worker safety codes, lighting that may be required to facilitate nighttime construction activities will be directed toward the center of the construction site and shielded to prevent light from straying offsite. Task-specific construction lighting will be used to the extent practical while complying with worker safety regulations. In spite of these measures, there may be times, when and if there is nighttime construction, when the Project site may temporarily appear as a brightly lit area as viewed from nearby locations.

5.15.4.3 Construction

During the Project construction period, construction activities and construction materials, equipment, trucks, and parked vehicles, all potentially may be visible on the plant site, offsite injection well pads, and borrow site, as well as along the injection pipeline routes. Construction activities will be conducted in a manner that minimizes (visible) dust emissions. Project construction will temporarily introduce additional vehicles, materials, and equipment into the view from nearby areas. Visual changes associated with construction period activities at both the plant site and along linear routes will be moderate and temporary for the plant site and minor and temporary for the offsite facilities (because of the shorter duration of the well field construction and borrow site use compared to the plant site). Overall, Project construction impacts on visual resources would be less than significant.

5.15.4.4 Operation

The following subsection discusses the visual resources impacts during Amended Project operation. As described below for each of the KOPs, the Project will change the visual appearance of the area. When viewed from eye level, the power block will be visible above the surrounding agricultural and recreational landscape.

While the Project itself will create a substantial visual contrast in the landscape, the overall impact on visual resources would be less than significant when the Project is considered in the context of its surroundings. The presence of the other nine existing geothermal plants within two miles of the Amended Project plant site represent a preexisting modification of the cultural landscape and provides contrasting geometric shapes

with the agricultural landscape. Both of these factors (the prior modifications and the contrasting shapes), diminish the potential for impact of the Project facilities.

Potential impacts at the designated KOPs are presented below, followed by a discussion of impacts in terms of specific significance criteria.

Impacts from KOPs

KOP-1 Entrance to the Sonny Bono Salton Sea National Wildlife Refuge

A simulation of the view of the Project site from KOP-1 is shown in Figure 5.15-4b; the existing view is shown in Figure 5.15-4a. In this view, the prominent visible features of the Project are the plant site and pipeline structures. These features would be visible in the foreground and middleground and would present a moderate level of dominance in the view. The presence of existing geothermal, industrial structures to the left and background in the view would help to ameliorate the visual effects of the features of the Project site.

The neutral earth-colored hues and non-reflective surface of the Project structures will reduce their visual contrast with their surroundings and help them to be absorbed into the overall view. Due to their close distance, Project facilities will be highly visible from this KOP. Therefore, the effect of the Project on the overall character of the view is expected to be moderate to strong. The general level of visual quality of the view from KOP-1 would change moderately. The presence of the Project features would moderately increase the vividness of the view, would have moderate effect on the overall intactness of the view, and would have moderate effect on the visual unity of the composition of the landscape. The overall impact of the Project facilities on visual resources would be less than significant.

KOP-2 Red Island Recreation Area

The simulation of the view of the Project site and facilities from KOP-2 is shown in Figure 5.15-5b; the existing view is shown in Figure 5.15-5a. The view from KOP-2 includes the Project site from a slightly higher elevation. The presence of existing geothermal, industrial structures to the left, right, and background in the view would substantially ameliorate the visual effects of the features of the Project site.

The neutral earth-colored hues and non-reflective surface of the Project structures will reduce their visual contrast with their surroundings and help them to be absorbed into the overall view. Due to their mid-ground distance, Project facilities are moderately visible from this KOP. Therefore, the effect of the Project on the overall character of the view is expected to be moderate to low. The general level of visual quality of the view from KOP-3 would change moderately. The presence of the Project features would decrease moderately the vividness of the view, would have moderate effect on the overall intactness of the view, and would have moderate effect on the visual unity of the composition of the landscape. The overall impact of the Project facilities on visual resources would be less than significant.

KOP-3 Residence on Lack Road

The simulation of the view of the plant site from KOP-3 is shown in Figure 5.15-6b; the existing view is shown in Figure 5.15-6a. The effect of the Project on the overall character of the view is expected to be minimal. The presence of the Project features would increase minimally the vividness of the view, would have minimal effect on the overall intactness of the view, and would have minimal effect on the visual unity of the composition of the landscape. The presence of existing geothermal, industrial structures to the left

and right and foreground in the view would substantially ameliorate the visual effects of the features of the Project site. The overall impact of the Project facilities on visual resources would be less than significant.

The neutral earth-colored hues and non-reflective surface of the Project structures will reduce their visual contrast with their surroundings and help them to be absorbed into the overall view. Due to their close distance, Project facilities are highly visible from this KOP. Therefore, the effect of the Project on the overall character of the view is expected to be moderate to strong. The general level of visual quality of the view from KOP-1 would change moderately. The presence of the Project features would increase moderately the vividness of the view, would have moderate effect on the overall intactness of the view, and would have moderate effect on the visual unity of the composition of the landscape. The overall impact of the Project facilities on visual resources would be less than significant.

KOP-4 Rock Hill

The simulation of the view of the Project from KOP-4 is shown in Figure 5.15-7b; the existing view is shown in Figure 5.15-7a. In the view from KOP-4, the visible features of the Project are the plant site structures and pipelines, which would be visible in the foreground and middle ground and would represent a moderate to strong level of dominance in the view. The presence of existing geothermal structures to the left and right and foreground in the view would substantially ameliorate the visual effects of the features of the Project site.

The view from KOP-4 is slightly elevated as compared to the Project. The earth-colored hues and non-reflective surfaces of structures will reduce their visual contrast with their background and help them to be absorbed to a moderate degree into the overall view. Therefore, the Project's impact on the overall character of the view is expected to be moderate. The general level of visual quality of the view from KOP-4 will not change significantly. The presence of the Project features would have a moderate affect on the vividness of the view, would have moderate effect on the overall intactness of the view, and would have a moderate to strong effect on the visual unity of the composition of the landscape. The overall impact of the Project on visual resources would be moderately significant.

Vapor Plume Analysis

Visible plumes that occur during daylight hours have the potential for producing an impact on visual resources. As was the case for the original SSU6 project, the Amended Project's cooling towers are a potential source of visible water vapor plumes. The main difference between the Amended Project and the original project is that there will be three cooling tower plumes instead of two (the 215 MW plant had two cooling towers). Because of the differences in the size of the power generating units (three 59 MW plants versus one 215 MW plant), each of the three plumes from the Amended Project will be smaller than the plumes from the original 215 MW project.

The two meteorological factors that are most significant in determining the potential for cooling tower vapor plume formation are the ambient temperature and the relative humidity. Given the dry, desert location, relative humidity tends to be low and ambient temperature tends to be warm during the daytime hours. Visible vapor plumes, however, tend to form during periods with lower temperatures and high humidity, such as during periods of winter precipitation. Thus, it is expected that the visual impacts of vapor plumes from the Project will be limited and concentrated during periods of inclement weather, when the ambient conditions already will likely be contributing to reduced visibility.

Modeling performed for the original SSU6 project predicted a cooling tower plume frequency of less than 10 percent of seasonal daylight “clear” (no rain/fog high visual contrast hours during November through April). The 10 percent value was used as the threshold of impact significance and thus, impacts of the original SSU6 project were considered less than significant (CEC, 2003). Although no additional modeling was performed for the Amended Project, meteorological conditions would be expected to be similar to those used in the original modeling, and thus Amended Project cooling tower plumes also would be considered less than significant.

Most importantly, cooling tower plumes from the Amended Project will occur in a visual context where there are nine existing geothermal plants within a two-mile radius, each of which has a cooling tower that will create visible cooling tower plumes under the same conditions (i.e., the same times) as the Amended Project. Thus, the Project occasionally will add a number of small visible cooling tower plumes to a situation where a large number of cooling tower plumes already exist. The Project’s incremental impact would be small. Moreover, Amended Project cooling tower plume emissions would be smaller than those of the original SSU6 project.

A potential concern is the possible impact to viewers from a particular scenic viewpoint — in this case the Wildlife Refuge or Rock Hill. While viewers from such locations might be able to observe Project cooling tower plumes occasionally in the background, they would occur under circumstances where there would be similar visible plumes from the nine existing facilities in the immediate area. Moreover, the same situation would have occurred with the original SSU6 project, so there is no difference in potential impacts.

The original 185 MW project would have had another type of visible plume that was larger than the cooling tower plume, although this type of plume would not have occurred with the 215 MW project that was approved in the 2005 CEC amendment. These larger plumes will not occur with the Amended Project. These larger plumes would have been released from the atmospheric flash tanks (AFTs), which are in service around the clock as long as the power plant is operational. AFTs are specific to the crystallizer-reactor-clarifier (CRC) process employed by the multiple flash technology proposed in the original project to separate solids from spent brine. The AFTs had been designed to reduce the brine pressure from 20 pounds per square inch to atmospheric pressure before the brine entered the clarifiers. Several of the existing geothermal power plants in the Project area use multiple flash technology and thus emit visible plumes from their AFTs. The Amended Project proposes to use single flash geothermal technology which does not require solids separation, and will not have AFTs, CRC units or clarifiers, and will not have any AFT plumes.

In summary, the Amended Project will have less than significant visible plume-related visual resources impacts. While the Project will emit visible cooling tower plumes occasionally, the plumes will occur in an area where such plumes already occur from other facilities and will be similar to SSU6 plumes. Additionally, the Amended Project will not emit the type of larger plumes from AFTs which would have been emitted by the initially proposed 185 MW SSU6 project (but not by the subsequent 215 MW project). In this sense, Amended Project impacts would be less than the initial proposed SSU6 project.

Evaluation Against Significance Criteria

Project impacts were evaluated in terms of four questions (CEQA Guidelines Appendix G), each of which is presented below along with a response:

1. *Would the project have a substantial adverse effect on a scenic vista?*

No, due to the presence of similar structures at the existing geothermal plant immediately to the east of the Amended Project plant site, as well as the several other existing geothermal plants within a two-mile radius of the plant site.

2. *Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?*

No. There are no scenic resources at the Project site and none will be damaged.

3. *Would the project substantially degrade the existing visual character or quality of the site and its surroundings?*

No, due to the presence of similar structures at the existing geothermal plant immediately to the east of the plant site, as well as the several other existing geothermal plants within a two-mile radius of the plant site.

4. *Would the project create a new source of substantial light and glare that would adversely affect day or nighttime views in the area?*

No, due to the presence of light and glare from the existing geothermal plant immediately to the east of the plant site, as well as at the several other existing geothermal plants within a two-mile radius of the plant site.

5.15.4.5 Cumulative Impacts

The Amended Project's contribution to cumulative visual effects would be less than significant. The Project will be a large, relatively low profile geothermal facility in an area that already contains nine similar existing facilities. The CHAR geothermal facility, approximately 3.4 miles from the Project site, would represent one more incremental geothermal facility in the general viewshed of the area. Other projects considered for potential cumulative effects (Los Angeles Department of Water and Power solar project near Niland and Ormat's East Brawley geothermal project) are too far from the Amended Project plant site to result in significant potential cumulative visual resources impacts when considered together with the Amended Project.

5.15.5 Mitigation Measures

Visual resources mitigation measures are embodied in the CEC's Conditions of Certification (COC) for the original project. The Applicant proposes no changes to the existing COCs as shown in the following section.

5.15.6 Conditions of Certification

Following are the visual resources Conditions of Certification (COC) from the Commission Decision on the original project. The Applicant recommends no changes to the COCs below. However, the Applicant notes below that part of COC VIS-2 applies only to the transmission lines. Because they are already licensed and will not be modified by the Amended Project, the transmission lines are not covered in this Amendment Petition.

VIS-1 The project owner shall ensure that visual impacts of project construction are adequately mitigated. To accomplish this, the project owner shall require the following as a condition of contract with its contractors to construct the proposed project:

1. Laydown areas for linear facility construction shall be screened if they are visible from residences or adjacent roads within one-half mile. All evidence of construction activities, including ground disturbance due to staging and storage areas, shall be removed and remediated upon completion of construction to its pre-construction condition. Any vegetation removed in the course of construction will be replaced on a 1-to-1 basis. Such replacement planting shall be monitored for a period of three years to ensure survival. During this period, all dead plant material shall be replaced.
2. The project owner shall submit a plan to the CPM for review and approval for screening laydown areas and restoring the surface conditions of any staging and storage areas and rights of way disturbed during construction of underground pipelines. The plan shall include returning laydown and linear facility work areas to the original grade, contouring and revegetation.
3. The project owner shall not implement the restoration plan until receiving written approval from the CPM.

Verification: At least ninety (90) days prior to beginning implementation of surface restoration of construction impacts, including construction of linear facilities, the project owner shall submit the restoration plan to the CPM for review and approval.

If the CPM notifies the project owner that any revisions of the restoration plan are needed before the CPM will approve the plan, within thirty (30) days of receiving that notification, the project owner shall submit to the CPM a revised plan.

The project owner shall notify the CPM within seven (7) days after completing the surface restoration that it is ready for inspection.

VIS-2 Prior to start of commercial operation, the project owner shall treat project structures, buildings, production and injection wells and related pipelines, and fences visible to the public such that: their colors minimize visual intrusion and contrast by blending with the landscape; and their surfaces do not create excessive glare. A specific treatment plan shall be developed for CPM approval to ensure that the proposed colors do not unduly contrast with the surrounding landscape colors. The plan shall be submitted sufficiently early to ensure that any pre-colored buildings, structures, and linear facilities will have colors approved and included in bid specifications for such buildings or structures. Prior to submittal of the plan to the CPM, the project owner shall submit the plan to Imperial County for review and comment. The submittal to the CPM should include the County's comments. The treatment plan shall include:

1. specifications, and 11" x 17" color simulations, of the treatment proposed for use on project structures, including structures treated during manufacture;
2. a list of each major project structure, building, tank, and fence specifying the color(s) proposed for each item;
3. samples of each proposed treatment and color on the materials to which they are to be applied for major structures;

4. documentation that a non-reflective finish will be used on all project elements visible to the public;
5. a detailed schedule for completion of the treatment; and
6. a procedure to ensure proper treatment maintenance for the life of the project.

After approval of the plan by the CPM, the project owner shall implement the plan according to the schedule and shall ensure that the treatment is properly maintained for the life of the project. The project owner shall install tubular steel transmission line structures in transmission corridors whenever possible, and away from residences to the extent possible. The steel poles should be coated with a neutral gray finish. The project owner shall install non-specular conductors. *(Note: The preceding two sentences of the COC apply to the transmission lines; the transmission lines are not included in the Amendment Petition.)*

For any structures that are treated during manufacture, the project owner shall not specify the treatment of such structures to the vendors until the project owner receives notification of approval of the treatment plan by the CPM.

The project owner shall not perform the final treatment on any structures until the project owner receives notification of approval of the treatment plan from the CPM.

Verification: At least ninety (90) days prior to ordering the first structures that are color treated during manufacture, the project owner shall submit its proposed plan to the CPM for review and approval and to Imperial County for review and comment.

If the CPM notifies the project owner that any revisions of the plan are needed before the CPM will approve the plan, within thirty (30) days of receiving that notification, the project owner shall submit to the CPM a revised plan.

Not less than thirty (30) days prior to the start of commercial operation, the project owner shall notify the CPM that all structures treated during manufacture and all structures treated in the field are ready for inspection.

The project owner shall provide a status report regarding treatment maintenance in the Annual Compliance Report.

VIS-3 To partially screen views of the power plant from visitors to Rock Hill, native trees (e.g., palo verde, ironwood and mesquite) shall be strategically planted in sufficient density to partially screen project structures. The project owner shall work with Imperial County to widen the McKendry Road berm for the length of the project site and to plant the specified trees along the south side of the widened section on the top of the berm. If this approach is proven not to be practicable, the project owner shall provide a written explanation to the CPM along with a plan for tree planting along the north boundary within the project site.

The project owner shall submit a tree planting plan to Imperial County, the Salton Sea Refuge manager, and USFWS for review and comment and to the CPM for review and approval. The submittal to the CPM shall include the County's comments. The Plan shall include:

1. a detailed diagram showing the location and type of each tree to be planted;
2. a description of the size and age of each tree type at time of planting;

3. a description of how the trees will be watered and for how long to ensure they survive; and
4. a description of how and when dead trees will be replaced for the life of the project.
5. The project owner shall not implement the plan until the project owner receives approval of the submittal from the CPM. However, the planting must be completed by start of project operation.

Verification: Prior to start of commercial operation and at least ninety (90) days prior to tree planting, the project owner shall submit the tree planting plan to Imperial County, the Refuge manager, and USFWS for review and comment, and to the CPM for review and approval.

If the CPM notifies the project owner that revisions of the submittal are needed before the CPM will approve the submittal, within thirty (30) days of receiving that notification, the project owner shall prepare and submit to the CPM a revised submittal.

The project owner shall notify the CPM within seven (7) days after completing tree planting, that the trees are ready for inspection.

VIS-4 Prior to start of commercial operation, the project owner shall design and install all lighting such that light bulbs and reflectors are not visible from public viewing areas and illumination of the vicinity and the nighttime sky is minimized during both project construction and operation. The project owner shall develop and submit a lighting plan for the project to the CPM for review and approval. The lighting plan shall include:

1. lighting shall be designed so that during both construction and operation, highly directional, exterior light fixtures are hooded, with lights directed downward or toward the area to be illuminated and so that backscatter to the nighttime sky is minimized. The design of this outdoor lighting shall be such that the luminescence or light source is shielded to prevent light trespass outside the project boundary, consistent with operational safety and security;
2. high illumination areas not occupied on a continuous basis such as maintenance platforms shall be provided with switches or motion detectors to light the area only when occupied; and
3. a lighting complaint resolution form shall be used by plant operators, to record all lighting complaints received and to document the resolution of those complaints. All records of lighting complaints shall be kept in the on-site compliance file.

Verification: At least 90 days prior to ordering any permanent exterior lighting, the project owner shall contact the CPM to discuss the documentation required in the lighting mitigation plan.

At least 60 days prior to ordering any permanent exterior lighting, the project owner shall submit to the CPM for review and approval and to the Imperial County for review and comment a plan that describes the measures to be used and that demonstrates that the requirements of this condition will be satisfied. The submittal to the CPM shall include the County's comments. The project owner shall not order any exterior lighting until receipt of CPM approval of the lighting mitigation plan.

At least thirty (30) days prior to start of commercial operation, the project owner shall notify the CPM that the lighting has been completed and is ready for inspection.

The project owner shall document any complaints about permanent lighting using the lighting complaint resolution form and provide a copy along with a discussion of resolution measures taken in the Annual Compliance Report for that year.

5.15.7 References

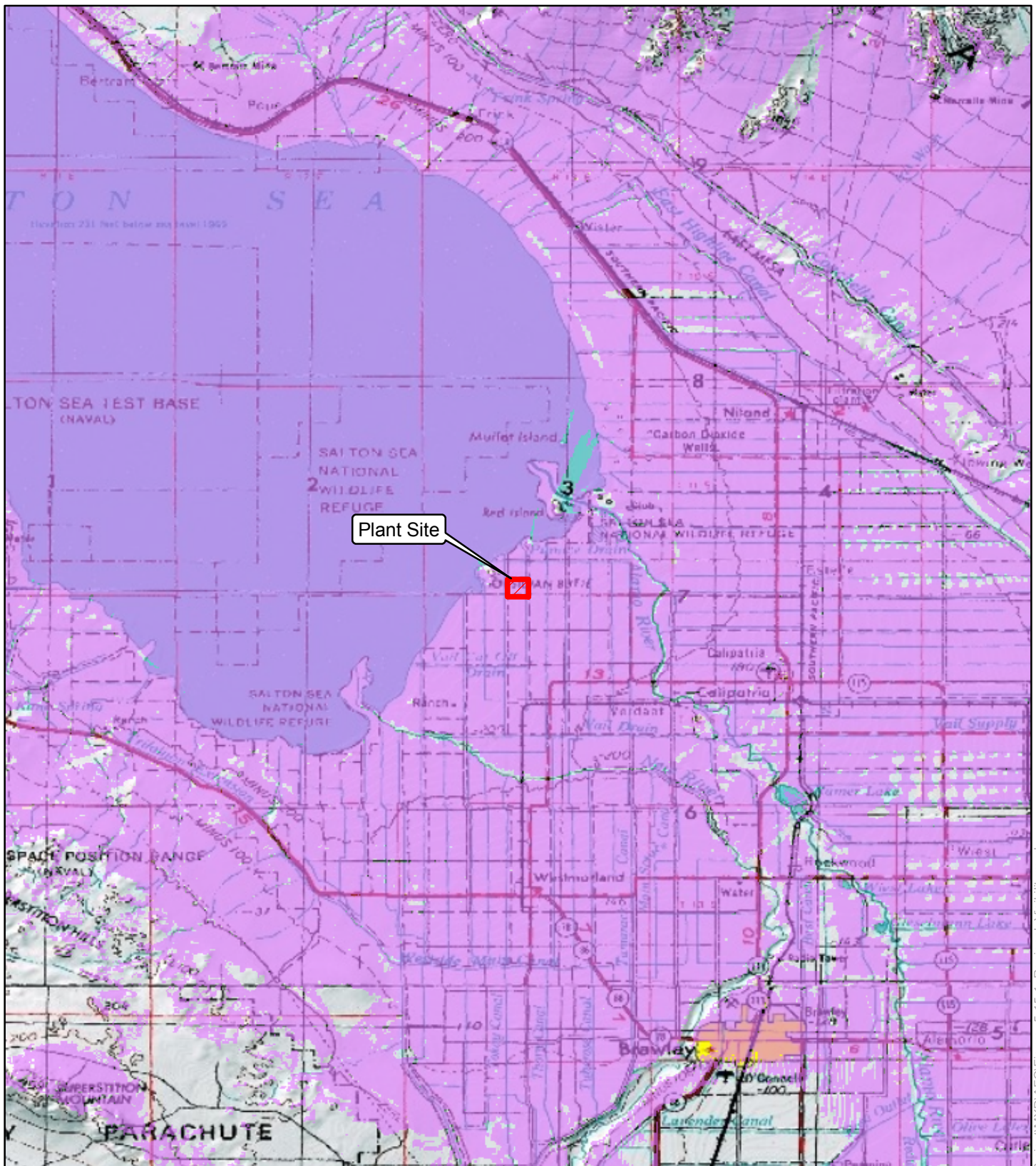
Buhyoff, G.J., P.A. Miller, J.W. Roach, D. Zhou, and L.G. Fuller, 1994. An AI Methodology for Landscape Visual Assessments. AI Applications. Vol. 8, No. 1, pp. 1-13.


California Energy Commission. 2003. Commission Decision, Salton Sea Geothermal Unit #6 Power Project, Application for Certification (02-AFC-2). December.

United States Department of Agriculture, Forest Service, 1995. National Forest Landscape Management Volume 1. Washington D.C.: Superintendent of Documents.

United States Department of the Interior, Bureau of Land Management (BLM), 1984. Visual Resource Management System Manual. <http://www.blm.gov/nstc/VRM/8410.html>

United States Department of Transportation, Federal Highway Administration, 1988. Visual Impact Assessment for Highway Projects.



 Plant Site Visible



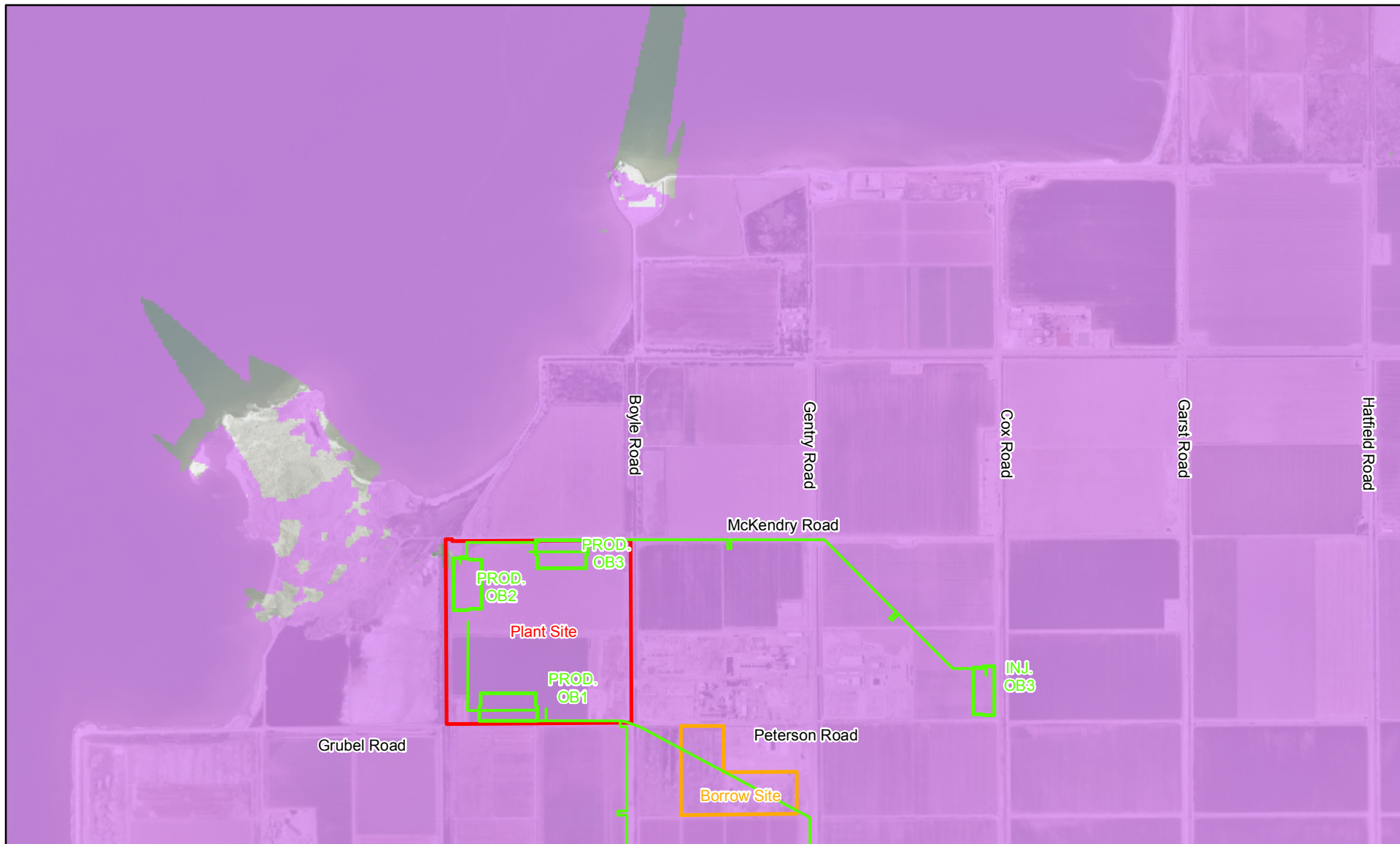
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0 2 4 6 Miles

Amended SSU6 Project Figure 5-15-1 Regional Visibility of the Plant Site

 **CEGENERATION**
A MIDAMERICAN ENERGY HOLDINGS COMPANY AFFILIATE

AECOM

Project: 12676-001
Date: February 2009



See Mapsheet 2 of 2

Legend

- Plant Site
- Proposed Well Pad
- Plant Site Visible
- Borrow Site
- Proposed Pipeline

1 inch = 2,000 feet

0 1,000 2,000 4,000 Feet



Amended SSU6 Project

**Figure 5.13-2
Local Visibility
of the Plant Site**

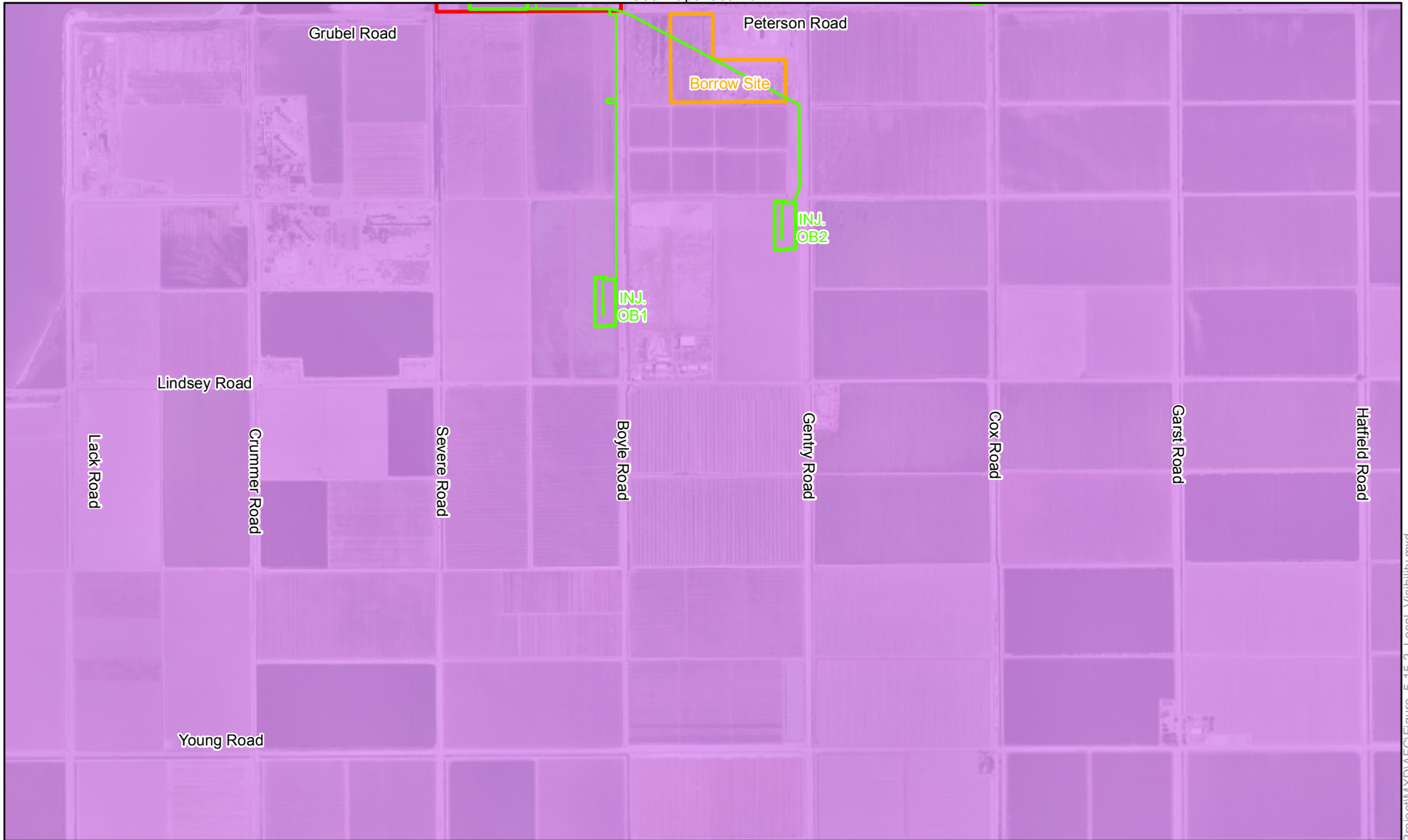
Mapsheet 1 of 2



AECOM

Project: 12676-001
Date: February 2009

See Mapsheet 1 of 2



Legend

- Plant Site
- Borrow Site
- Proposed Well Pad
- Proposed Pipeline
- Plant Site Visible

1 inch = 2,000 feet

0 1,000 2,000 4,000 Feet



Amended SSU6 Project

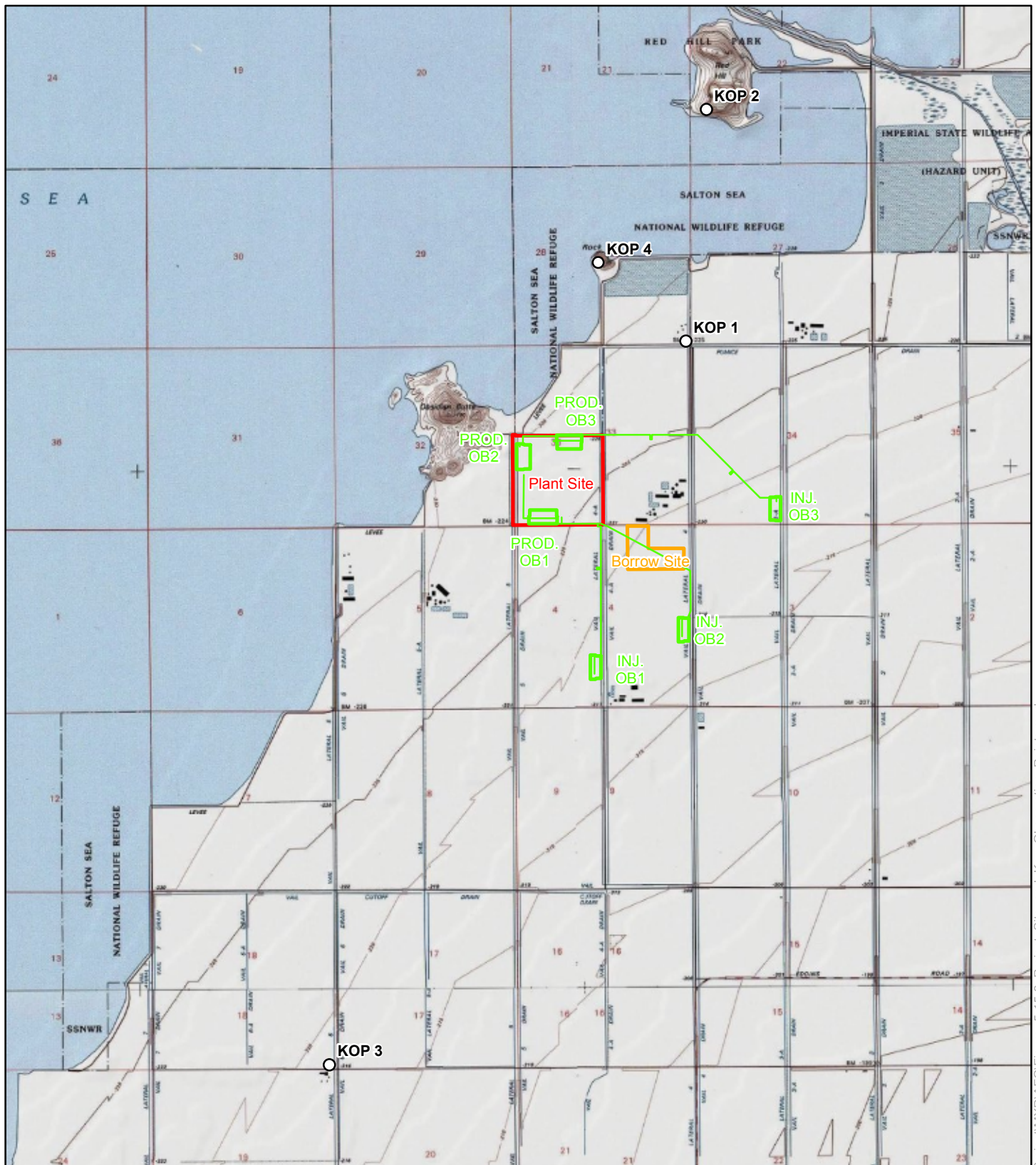
**Figure 5.13-2
Local Visibility
of the Plant Site**

Mapsheet 2 of 2



AECOM

Project: 12676-001
Date: February 2009



Legend

- Plant Site
- Proposed Well Pad
- Borrow Site
- Proposed Pipeline
- Key Observation Points



1 inch = 4,000 feet

0 2,000 4,000 8,000 Feet

Amended SSU6 Project

Figure 5.15-3
Project Site and
Key Observation Points



AECOM

Project: 12676-001
Date: February 2009

Figure 5.15-4a View from KOP-1 Looking Toward Project Site – Existing Conditions



Figure 5.15-4b View from KOP-1 Looking Toward Project Site – Simulated Condition



Figure 5.15-5a View from KOP-2 Looking Toward Project Site – Existing Condition



Figure 5.15-5b View from KOP-2 Looking Toward Project Site – Simulated Condition



Figure 5.15-6a View from KOP-3 Looking Toward Project Site – Existing Condition



Figure 5.15-6b View from KOP-3 Looking East Toward Project Site – Simulated Condition



Figure 5.15-7a View from KOP-4 Looking East Toward Project Site – Existing Condition



Figure 5.15-7b View from KOP-4 Looking Toward Project Site – Simulated Condition

